

The Mining Journal

London, July 28, 1961

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The Gold Substitution Game

UNLIKE some of the other major metals which are sensitive to substitution when their prices become too high, gold has become increasingly prone to attack by substitution because its dollar price has remained unchanged since 1934. No other metal would be in remotely adequate supply today if selling at 1934 prices, nor at such price levels would the normal escape of substituting away from the metal in scarce supply be possible, if price levels generally were such that alternative metals were in equally short supply.

In the case of gold, however, this is precisely what has been happening, except that, while the world's monetary managers have been substituting away from gold, they have not been substituting into other metals but into the increasingly chancy expedient of holding dollars (convertible into gold) as well as sterling and other leading "inconvertible" currencies, which at various times have been more or less freely convertible into dollars and so, at second hand, into gold. Central bankers who held these "inconvertible" currencies as part of the backing for their national monetary systems, did so in the expectation that by the time they wanted to convert them back into gold or dollars, their gold value would not have changed. Periodically, of course, this expectation became rather dim with the consequence that the country owning the gold substitute currency, which had become suspect, would sometimes suffer quite unnecessary internal economic convulsions.

Leaving aside the even more chequered history of some other European currencies, the assumption that sterling was a reliable gold substitute received a nasty jolt in 1949, when quite a lot of Britain's friends found themselves holding sterling which was suddenly worth considerably less gold than the day before, a situation which led to devaluation in about thirty countries. Again last winter it began for a while to look as if the dollar might be devalued. This would have touched off a much bigger chain reaction of currency devaluations which, in an untidy way, would have had much the same effect as if the price of gold had been raised simultaneously in relation to all currencies under machinery such as that existing in the Bretton Woods Agreement.

As things are, however, and notwithstanding the large scale substituting away from gold which has occurred since World War II, monetary gold stocks plus gold substitutes (i.e. foreign exchange holdings which have mainly taken the form of drawing rights on the I.M.F. together with dollar and sterling balances) had by the end of last year grown in value since 1934 by only about half the growth in value of world trade in the same period. Moreover, it could scarcely be claimed that some of the gold substitutes had proved as reliable in use as the metal itself. Thus up to about a year ago, although the dollar despite various alarms and excursions had remained virtually as good as gold, sterling, aside from having one devaluation to its discredit, had in fact been no real substitute at all either during the 1940's and early 1950's when it was subject to a variety of blockages and controls, or in the later fifties when every two or three years it suffered bouts of weakness which promptly conjured up unpleasant memories of 1949.

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Further, during the past year, first the dollar, and then more recently sterling (in spite of it having embraced convertibility last February within the terms of the I.M.F. Agreement), have been in a condition of *quasi* inconvertibility by virtue of the gentlemen's agreement between the leading central banks to refrain from exercising their right to convert these currencies into gold. It would thus appear that there has been a tacit agreement to accept these gold substitutes at their face value rather than run the risk that if some such convention were not adopted the promise to pay gold on demand might have been suspended thereby rendering the currency concerned manifestly unacceptable as a gold substitute, and probably resulting in the whole gold substitute game having to be set up afresh.

Changing the Rules

By the end of last year it must have become apparent, even in Washington, that the rules of this game were going to have to be changed considerably, or else that the price of gold would have to be raised to the point where substitution could be dispensed with.

Having regard to the psychological "thing" in the American mind about it being indecent, or humiliating, or advantageous to Russia, or something to call the price of gold anything other than \$35.00 an ounce, it is hardly surprising that Washington should have sought to persuade the rest of the players to change the rules of the substitution game rather than the dollar price of gold.

A first step in this direction was made last February when Sterling, the D-mark and eight other currencies became formally convertible by embracing Article 8 of the I.M.F. Agreement under which currencies are guaranteed to be kept fully convertible for non-residents and free from discriminations and controls. This step, however, did no more than render these currencies more acceptable as tokens in the substitution game and it provided no guarantee that if the rest of the players did not like the colour of a particular token—and they haven't been much liking the colour of the Sterling token lately—they would necessarily consent to go on playing with it.

Obviously, the game was very liable to break down so long as this sort of thing could keep happening. Consequently, the I.M.F.'s "rules-of-substitution-committee" (a body which may only exist as such in our golf-crazed imagination!) has nowadays to keep the game under fairly constant review, and has been seriously considering the idea of calling in everybody's tokens in exchange for a new "I.M.F." token. True, the backing for this new token would in effect be the old national tokens which have been called in, but instead of the unpredictability of any of the players taking a sudden dislike to one of these old tokens, the I.M.F. alone would have to worry about whether the old tokens now serving as backing for the new I.M.F. token, were maintaining their gold value. This, admittedly would be quite a worry, and it is easy to imagine the I.M.F. having to talk pretty severely to any central bankers in the game whose governments appeared to be acting so as to bring the gold value of their tokens into question.

This, in told-to-the-children form, is where we would all be getting to under the Triffin plan which visualizes, in effect, converting the I.M.F. into a world central bank with the creation of an international currency unit to take its place alongside gold. Professor Triffin of Yale is generally credited with having President Kennedy's ear, but it has apparently come to be realized, even in Washington, that the central bankers of this world, or, if not they, then at least the governments who appoint them,

could scarcely be expected to stand for this degree of encroachment on national sovereignty at one dose.

Consequently, the I.M.F.'s rules-of-substitution committee in casting around for a less radical set of revisions, is now reputed to be favouring an alternative solution put forward by Mr. E. M. Bernstein formerly director of research and statistics at the I.M.F.

An Alternative Proposal

Briefly, the Bernstein plan presupposes that existing monetary gold stocks plus I.M.F. members' quotas plus the remainder of members' own reserves, would together provide sufficient total liquidity for the requirements of world trade. On the other hand, as the central banks won't stand for a supra-national central bank *à la* Triffin issuing the new I.M.F.-backed token, Mr. Bernstein argues that the problem has still to be solved of players taking a dislike to the colour of an existing national token which might quickly render it unfit for play. Under his plan, this would be guarded against by the I.M.F. becoming, not a supra-national bank with a world currency, but a lender of last resort on a much larger scale than its present resources allow, to countries whose currencies were under pressure. To permit this, the I.M.F., or rather under his proposal a parallel accounting organ to be called the Reserve Settlement Account, would stockpile additional supplies of the currencies most widely used in international trade and belonging to the countries, whose balance of payments could consequentially cause considerable disruption when moving heavily from surplus into deficit (or vice versa).

These countries would be asked to buy some sort of I.M.F. debentures on which they would be paid interest which would be charged against the borrowing nations. Also, to make the whole operation appear gilt-edged (if not to serve as a further curt reminder that gold is only supposed to be worth \$35 per oz.), these debentures would, of course, have a gold backing. The United States, it has been suggested, would be expected to subscribe for a maximum of \$3,000,000,000 of these debentures and the U.K. a maximum of \$1,500,000,000 while Germany, Canada, Japan, France, Italy, Holland and Belgium would between them be expected to be good for another \$3,500,000,000.

This, at all events, appears to be the outline of the latest plan which is being cooked up to persuade us to go on managing with gold at its present price by the dubious expedient of counting our drawings from the I.M.F. (i.e. our debts) as assets. It remains to be seen whether those central bankers who subscribe to the I.M.F., and are, therefore, entitled to be in the game, will agree to these new rules. The rules-of-substitution committee is doubtless lobbying actively behind the scenes and the plan should provide a lively topic of discussion at the I.M.F.'s annual meeting in Vienna in September, whether or not it is officially on the agenda on that occasion.

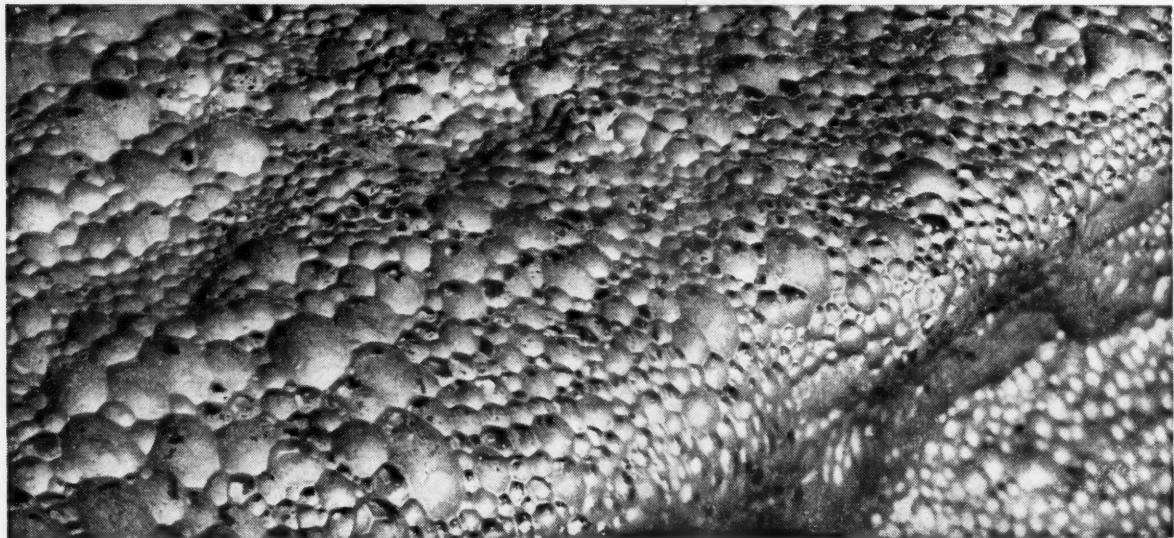
At the moment, there seems to be quite a possibility that the Bernstein plan in some form will be given a trial this Autumn. However, even if it succeeds for a while, the rules-of-substitution committee can scarcely be disbanded, as further modifications to the rules will become inevitable as and when gold reserves at \$35 plus the I.M.F.'s expanded lending powers plus members' own reserves, again become insufficient to the requirements of expanding international trade.

Indeed, in the context of bringing Western aid to the underdeveloped countries, which next to the continued pegging of the gold price appears to be President Kennedy's



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most immediate objective, the I.M.F.'s expanded reserves may prove inadequate almost from the start. Sterling for example, would immediately have to be supported in a very big way if Britain is to carry what Washington has been suggesting should be its share of foreign aid—unless, of course, there was to be a complete *volte-face* in Whitehall and most of it turned out to be tied aid !

A Higher Gold Price the Only Real Solution

Whether Washington likes it or not, the inescapable fact is that, however the rules are modified, the changes are at best only buying time and at worst are effectively retarding the growth of trade in the Free World in a period when the outcome of the cold war is more than ever dependent upon the extension of this trade, more especially to many of the emergent countries outside the Communist orbit.

Some of these countries have, perhaps, not acquired the degree of monetary sophistication, which is needed for the successful playing of this I.M.F. game and may well lose patience any time the game gets too confusing or too rough, and revert to type by expressing a thoroughly understandable preference for being paid in gold, for whatever they export. Moreover, any time such countries showed a disinclination to play to the I.M.F. rules, they would have only to turn to Russia which has, for many years, been paying in gold for her net imports.

It is, in fact, the prospect of the overwhelming psychological victory Russia would gain from such a situation, which is the best guarantee to the gold industry that, sooner or later, the I.M.F. and Washington will have to stop their monetary make-believe and allow gold to do its job properly by re-pegging its price at a realistic level.

While this will, of course, solve the central problem it can never be a panacea for the economic ills of individual countries, such as Britain, which persist in remaining more or less chronically in deficit with the rest of the world. Thus, the individual bad boys will still have to learn to mend their ways, but at least when gold is at last revalued—if it is not by then too late—they will have sufficient reserves to be able to apply the necessary long-term economic remedies instead of rushing from one short term monetary expedient to another, none of which provides a solution to the underlying cause of economic imbalance. This, if Britain's case is any guide, usually turns out to be one of paying ownership, management and labour too much for too little. That, however, is quite another story from ours about the metal which can only escape the threat of substitution by raising its price !

WEST GERMAN OUTPUT IN 1960—FINAL FIGURES

Final figures now issued by the West German non-ferrous metals trade association Wirtschaftsvereinigung NE-Metalle give a more exact picture of 1960 Federal German production than the provisional totals published in *The Mining Journal*, February 17, 1961. The revised list shows a 5 per cent fall in West German mined production of lead over 1959—to 49,894 tonnes—an increase of 5.2 per cent in mined production of zinc—to 86,327 tonnes—and an increase of 23.7 per cent in mined copper output to 1,777 tonnes (provisional figures gave a slight drop over the year for the latter commodity). Refinery production of copper, lead and zinc reached post-war records, as did that of aluminium. Production of unalloyed primary metals was for lead 207,000 tonnes (7.5 per cent above 1959), for copper 234,000 tonnes (plus 10.9 per cent), for zinc 203,000 tonnes (plus 2.8 per cent) and for aluminium 169,000 tonnes (plus 11.7 per cent). Total West German metal imports,

excluding those of precious metals, rose over the year from DM 2,100,000,000 to DM 3,780,000,000.

Metal ore mining, according to the Wirtschaftsvereinigung's report, continued under an economic shadow. Turnover of West Germany's lead mines was last year 37 per cent lower than in 1950 and that of zinc mines lower by 23 per cent. Over the same ten-year period wages, which account for 50 to 60 per cent of total costs, doubled. To counter this further rationalization steps were taken and over 1960 productivity rose by 16 per cent per man per shift and extractable metal content of mined ores by 11 per cent.

West German demand for non-ferrous metals continued to increase. A rise even steeper than that recorded for 1959 over 1958 was recorded last year for aluminium (by 36.6 per cent to 460,000 tonnes), for copper (by 15.2 per cent to 640,000 tonnes), for nickel (by 40 per cent to 21,700 tonnes) and for tin (by as much as 76.1 per cent to 23,600 tonnes). This latter metal, however, was the only one whose inland refinery actually fell over the year (by 9.5 per cent). Increases in consumption were also recorded for lead (by 9.9 per cent to 280,000 tonnes) and zinc (by 8.6 per cent to 328,000 tonnes), though these were below the rate of increase recorded for the previous year.

MINING IN THE PHILIPPINES

The Mining Federation of the Philippines was formally organized at a meeting of representatives from the Philippine Gold Producers Association, the Philippine Base Metals Association, and the Philippine Petroleum Association. As now constituted, reports *Philippine Mining Journal*, the Federation is composed of these three member associations. In turn, each member firm is represented by its president and two other representatives.

The report states that the organizers of the Mining Federation saw the immediate need to organize themselves into one group so as to cultivate a spirit of co-operation and friendly relations in the industry; co-ordinate close and effective co-operation with the government; enhance and encourage the development and utilization of the country's mineral resources; create incentives for a better investment atmosphere and attract local as well as foreign capital to assist in the development of the country's wealth, and provide gainful employment for the masses of the people.

Since 1946 the trend in Philippine mineral production has been upward, comments the journal, but the rate of increase in the 1960 production was lower than that of 1959. The total value of mineral production in 1960 was P274,245,798, being an increase of 3.54 per cent over the 1959 output, valued at P264,851,794, which in turn represented a gain of 21.7 per cent over 1958.

The metallic minerals (gold, silver and base metals) accounted for 66 per cent by value and the non-metallics for 35 per cent of the total production. Heading the list was copper with an output valued at P59,067,192 or 21.5 per cent of the total value.

The gold output of 410,618 oz. was valued at P57,987,474 at the average price of P141.22 per oz., compared with 402,615 oz. valued at P57,461,213 for 1959 when the average was P142.72 per oz. The 1960 export value of Philippine gold was largely affected by a local phenomenon—the implementation of decontrol where the price of gold declined.

The value of base metals production rose by 3.6 per cent in 1960 to P119,200,000 from P115,100,000 in 1959. The principal non-metals showed moderate gains, but the value of the gypsum output at P549,224 was 56 per cent higher.

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from P21,664,456 to P27,287,790 and metallurgical chromite from P5,763,146 to P6,649,264. These gains amounted to 26 per cent and 15 per cent respectively. On the other hand, manganese ore registered a big decrease both in volume and value of production, the latter falling by 47.9 per cent from P2,204,188 to P1,147,844.

During last year there were several newcomers to the ranks of producers, among them being Metropolitan Iron Mines (iron), United Mining Development Corp. (iron), Fernandez Hermanos (managanese), Ferty Mining Co. (managanese) and International Engineering Corporation (gold and silver).

Among the mines that made a good showing in 1960 were Surigao Consolidated and Liberty Chromite. The former company recorded its zinc production at 4,978 tonnes against 5 tonnes in 1959, while Liberty Chromite raised its output of metallurgical chromite to 4,897 tonnes from 1,992 tonnes in 1959.

BAUXITE IN KUTCH

Experts of the Geological Survey of India have located large deposits of bauxite in Kutch. The bauxite bearing strata have been located in Mandvi, Nakhatrana, Lakhpat, Anjar, Mundra, Bhachau and Bhuj Talukas of Kutch district. Preliminary estimates put the deposits at some 2,000,000 tons. It is understood that the quality of bauxite found in Kutch is slightly inferior to that found in Saurashtra, but the deposits are two to three times those of Saurashtra. A detailed survey to assess the quality and quantity of bauxite in Kutch is now in progress.

A number of industrial concerns, including a Calcutta firm, are reported to be exploring the possibilities of setting up alumina plants in Kutch.

The State government, at the instance of the Centre, have banned the exports of raw bauxite by private parties, and has decided to make use of the mineral. Till recently, private parties were being given licences for mining bauxite in Kalyanpur and Bhatia areas of Saurashtra. The parties were exporting some 20,000 tons of raw bauxite annually, mostly to Italy, Japan, Germany and the United Kingdom.

A Saurashtra firm has planned to set up a Rs. 40,000,000 alumina plant in the Khambhalia area with Japanese collaboration, while a Bombay firm is exploring such a possibility.

TIN IN CANADA

Tin is one of the world's metals that, to date, has been limited to fairly well defined areas. Apart from certain small deposits, the North American continent has not been an area where one would expect a tin prospecting mission to be successful. It is possible, however, that for this very reason some economic tin areas may have escaped attention and, in fact, one such area has recently been discovered.

The existence of a mixed sulphide deposit in Charlotte County, New Brunswick, has been known for some time and the deposit has been investigated on several occasions already, but on each occasion the tin content has been overlooked and on the basis of copper, lead or zinc the deposit is of little economic value. At present the area is being re-prospected by Mount Pleasant Mines Ltd. mainly because of its tin-tungsten-molybdenum content. Boreholes have shown tin values up to 12 lb. per ton and it is planned to drive an adit into the area in order to confirm the early drilling. At present there appears to be no reason why this should not develop into a small but

successful cassiterite and mixed sulphide producer, and it is hoped that production may start early in 1963.

However, the importance of this prospect is not in the production of the individual mine which by world standards will be insignificant, but because of the possibility that there might be other similar deposits which could make this area an important tin producer. This does not seem impossible. The deposit under examination by Mount Pleasant Mines is of the hercynian period which is the age of most of the major tin deposits of the world, and local geologists believe that the area can be aligned with the Cornish deposits. Certainly the mineralization is similar to that found in parts of South Crofty, but the overall correlation with Cornwall is perhaps a little suspect.

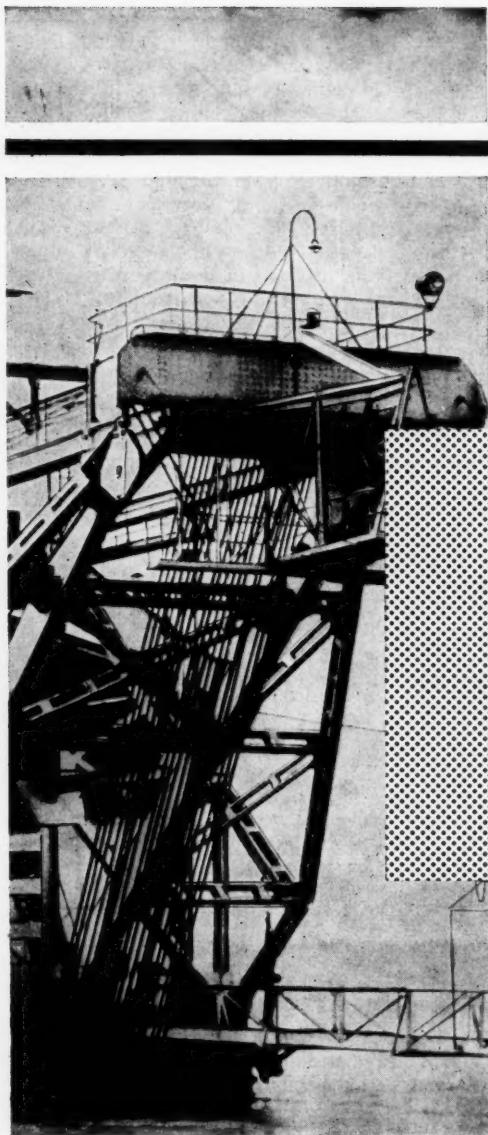
Minor occurrences of cassiterite have also been reported in the New Ross area of Lunenburg County, Nova Scotia, about 150 miles east of Mount Pleasant. Also close to Mount Pleasant alluvial tin has been found in the streams and the indications are that this has not necessarily derived from the existing main deposit. In view of the prevailing statistical position of tin, this area will be watched with considerable interest from both sides of the Atlantic.

DIFFICULTIES AHEAD FOR AUSTRALIAN COAL EXPORTS

The export coal trade, worth several million pounds per year to Australia, in the near future faces trouble owing to the inability of the coal ports and loading facilities to cope with the 45,000 ton colliers, five of which are stated to be building for Japan. Our Australian Correspondent reports that these will be diverted to the American coal trade because of the superior harbour and loading facilities immediately available. The Australian position has arisen through the long decline in export trade and the confining of shipping to interstate needs, for which small colliers provided satisfactory service. The great re-organization of the collieries, with consequent reduction in costs, has led to the re-establishment of export trade overseas, and potential and actual trade with Japan has outstripped the capacities of the shipping ports to deal with the large tonnages of coal which can be delivered by the collieries.

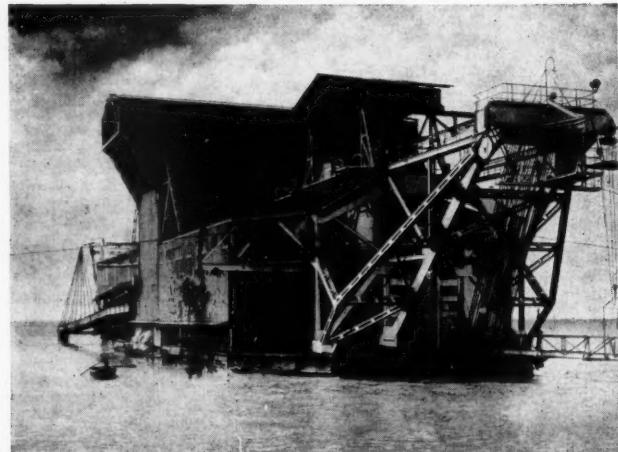
Endeavour is being made to cope with the demand for export coal, and the large ships entering the trade. Kembla Coal and Coke Company, New South Wales, is to build offshore coal loading facilities adjacent to the Coal Cliff highly mechanized colliery, at a cost of £A2,500,000, to load 45,000 ton ships in two days, an important factor in large contracts with Japan. The chairman of the Australian Coal Association has stated that government assurances remove any hindrances to the shipment of coal from the Newcastle, Maitland and Singleton districts, through the port of Newcastle. A statement has been issued that loading plant with a capacity of 2,000 tons per hour is to be installed at Newcastle. But until port facilities are brought up to world standard, Australia's export trade will be seriously handicapped.

There is no problem as to the availability of coal. In the six years to 1959-60, the colliery proprietors in the north have spent £A15,892,000 on mine mechanization and development, or 43 per cent of the total expenditure of the New South Wales coal industry over that period on mine mechanization and development in the Newcastle, Lake Macquarie, and Singleton districts. The north is Australia's leading producer of black coal and in 1959/60 produced 59 per cent of the State total. Average production per man-shift was 5.91 tons. Coal washing is fully accepted practice for quality control.

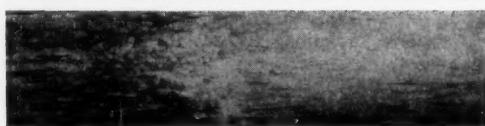


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Tin Prices and Substitution

AS SET out more fully in our issue of July 14, 1961, pp.29-33, no physical shortage of tin has as yet arisen, but market stability in 1962 must depend on how soon metal from the U.S. strategic stockpile is made available and on what terms. The I.T.C. has already made a formal approach to the U.S. Administration, which finds itself uncomfortably situated between two opposing fires. On the one hand domestic consumers, as represented by the Coatings Committee of the American Iron and Steel Institute, are already campaigning for the release of metal from the strategic stockpile. On the other hand, there is the danger of antagonising Bolivia with its nationalised industry, which is currently working at a loss. Dr. Guillermo Bedragal, President of Comibol, has already stated that any such move would constitute aggression against the underdeveloped producing countries. The view has been expressed, on whose inspiration we do not know, that production in many Bolivian mines would not be profitable until tin prices rose to around £1,200 a ton.

Although it can be assumed that the Administration has already intimated its readiness, in principle, to co-operate with the I.T.C., Congress may not easily be persuaded that prices have risen sufficiently to justify any disposals of stockpiled metal, having regard to the present delicate state of U.S. political relations with the South American countries. In any event, Congress is unlikely to sanction disposals from the stockpile at less than the average cost of acquisition, which according to A. Strauss and Co. is in the region of £1,000 per l. ton. It is probable, too, that conditional on any release from the national stockpile, the I.T.C. would be asked to raise the floor price of tin to a level which would ensure a greater return to high-cost producers in Bolivia and elsewhere.

To meet the growing demand for containers throughout the world, tinplate manufacturers, particularly in Europe and the Far East, are expanding their facilities and will be requiring increasing supplies of tin. It is imperative, therefore, that tin prices should be high enough to stimulate prospecting and production. They must not, however, be so high as to weaken tin *vis-a-vis* competitive materials, notably aluminium and plastics, which have hungry eyes on its major market, the tinplate industry. Reports from the U.S.A. state that already the steel industry's search for tin substitutes is being stepped up, prompted not only by rising prices but also by increasing fears of a physical shortage of tin.

The optimum price range, therefore, is one which will encourage high-cost producers, allow lower grade areas to be economically worked, and be politically favourable for the West, yet which is not high enough to bring any serious danger of widespread substitution in major fields of usage. Study of comparative metal prices and of tin's contribution to tinplate costs suggests that the prospect of higher tin prices is a good deal less alarming than it may at first appear.

Comparative Metal Prices

In common with other metals tin has become increasingly costly to mine in recent years, due not only to the declining purchasing power of the pound Sterling and other monetary units, but also to the working of progressively lower grades of ore. As can be seen from the accompanying table, even at £900 per ton tin's price is no higher relative to the prices of most other major metals than in 1913 or 1938. It is perhaps worth recalling however, that in 1951, due to stockpile procurement, the price of tin reached an all time peak of £1,620.

Average Prices Per l.Ton (to nearest £)

	Tin	Copper	Lead	Zinc	Aluminium	Nickel
1913	202	72	19	23	80	—
1938	190	46	15	14	97	180/185
1945	300	62	28	29	89	190/195
1960	797	246	72	89	186	600
18/7/61	909	229	65	78	186	660

Compared with annual average prices in 1938, tin has risen by roughly 450 per cent, copper by 500 per cent, lead by 460 per cent, zinc by 550 per cent, and nickel by over 350 per cent.

Comparison of the figures in the table becomes less reassuring when it is considered that the challenge to tin comes not from the other older major metals but from aluminium, which has barely doubled in price since 1938, as well as from nickel, cadmium, chromium and various plastics, either by themselves or in combination. At the same time, it has to be remembered that tin is seldom used in isolation; in the majority of its industrial applications it forms a very small part of the end product and of its cost of manufacture.

Tin in Manufacturing Costs

In his address to shareholders of London Tin Corporation, Sir Douglas Waring pointed out that the governing factor in the cost of materials used in the manufacture of tinplate was the price of steel and not the price of tin. The weight of a standard basis box of electrolytic tinplate in the U.K. is 108 lb., of which 107½ lb. is steel and ½ lb. tin. From this quantity of tinplate about 500 cans of a popular size are made by the can manufacturers. With tin at £880 per ton (the former I.T.A. ceiling price), the cost of the tin in a basis box is 3s. 11½d., which is equivalent to 0.095d. per can. A rise in the price of tin by £100 above the ceiling would account for an increase in the cost of the use of this material by about one hundredth of a penny per can.

Making a similar calculation on a tonnage basis, one l. ton of standard electrolytic tinplate contains 2,234½ lb. of steel and only 5½ lb. of tin. With tin at £880 per ton this would mean a material cost of £2 3s. 2½d. per ton of tinplate. If the price of tin rose by £100 the cost of the ton of tinplate would go up by only 4s. 11d. At the current price of 59s. 9d. per base box of 108 lb., and allowing for the 1 per cent surcharge introduced on June 19 this year, the present price of standard electrolytic tinplate in the U.K. is in the region of £62.6 per ton. Based on last year's average of £796, an increase in the tin price to £1,000 would raise the cost of making tinplate by 9s. 11d. and with tin at £1,200 the cost would be 19s. 10d. more, these increases in tinplate cost being less than 1 and 2 per cent respectively.

According to the *American Metal Market*, the U.S. steel industry reckons that for every 10 c. a lb. rise in the price of tin, the cost of making a ton of tinplate increases by an average of around \$1.10, the range being from 50 c. to \$2.50 depending on the weight of the coating.

It is evident from the figures given that the price of tin is unlikely to be a deciding factor in the selection of materials for containers. U.S. tinplate consumers are certainly showing no fear whatever of a higher tinplate price, but continue to order conservatively.

ELECTRIC SMELTING ON APPROVAL

for the first time in this country



Preparing to tap the pilot smelter

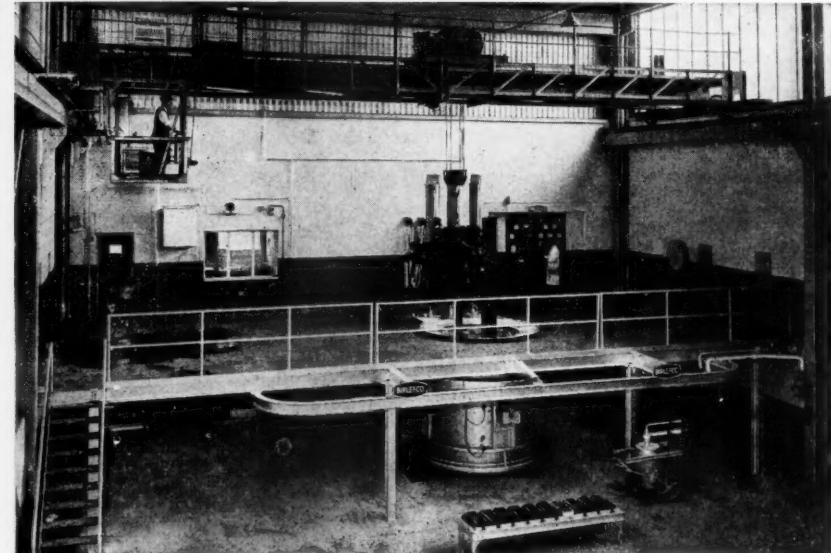
Electric Smelting of
CALCIUM CARBIDE
IRON ORES
MANGANESE ORES
FERRO CHROME
FERRO SILICON
NICKEL AND COPPER CONCENTRATES

Treatment of Slags and other electro-thermal processes

trial tests
on raw materials

For the first time in this country a contract service is available for electric smelting. A pilot smelting furnace, built by Birlec-Efco (Melting) Limited, is in operation at the Company's Aldridge premises to promote the development of electric smelting processes. The furnace, which is available to companies throughout the world, provides full scale testing facilities for the mining and electro-chemical industries.

Raw materials are accepted in trial batches for testing their amenity to electro-thermal reduction and for determining the most suitable smelting technique and the nature of the resultant products. At a fee agreed in advance the pilot smelting furnace is operated on customers' raw materials. Finished products and the balance of materials are returned to customer. At the end of the test Birleco presents a full report giving recommendations on smelting practice, electrical ratings and size of installation required for a given output.



The Birleco pilot smelting plant at Aldridge



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Tin Hits Back

In today's competitive conditions any addition to manufacturing costs is obviously undesirable, however small. Aluminium has been invading certain of tinplate's preserves, notably the oil, beer, aerosol and fruit juice markets. Recently a new threat has arisen in the form of a paperboard can body lined with aluminium foil and a quick-opening top, which is regarded as having encouraging prospects in certain fields. In the great bulk of tinplate's markets, however, no practical substitute is as yet in sight.

To persuade the American public to buy its "soda pop" in tin-plated containers, steel mills and can manufacturers are spending over \$11,000,000 on advertising this year, their aim being to widen their share of the market from 2.5 per cent last year to 3.5 or 4 per cent this year and about 10 per cent in three or four years. Another noteworthy development is the production of 2-gallon paint tins in tinplate. Hitherto this material has been used only in cans up to 1 gallon in size.

Even in those markets where tin has been losing ground, the development of "thin tinplate" has enabled the tin and steel industries to give aluminium a new run for its money. The American Can Co. was recently reported to be using all the thin tinplate it can get. Moreover, both American Can and Continental Can have reduced the price of their beer cans because they are now using thin tinplate. The

fundamental purpose of this material, however, is not to compete with aluminium but to bring new packaging markets within reach of the industry. To meet the growing demand for light gauge tinplate U.S. producers are rapidly increasing capacity. Production is also being taken up by manufacturers in other countries and it is understood that U.K. makers are looking into the possibilities of the material. At a meeting of engineers in Los Angeles early this year it was predicted that an even lighter, thinner product would become a commercial reality.

While the psychological impact of a higher tin price on market sentiment and metal usage should not, of course, be disregarded, lack of confidence in future availability would be a far greater incentive to substitution than price. The more marginal uses would doubtless be affected by any further rise in the price of tin, but in view of the near-term outlook for supplies of metal this might be no bad thing.

Whatever floor or ceiling prices are decided upon, the prime requirement is that they should make a maximum contribution towards assuring long-term availability of the metal. The I.T.C. has asked producer countries to submit details of production cost levels and break-even points in time for its next meeting, and it is to be hoped that the views of consumers regarding prices and their impact on substitution will also be canvassed. With this information at its disposal the I.T.C. might then be able to agree a more realistic range of prices than the limits laid down in the present Agreement, which must now be regarded as out of date.

Mining Projects in Tanganyika

C.D.C.'s £2,000,000 Macalder Loss

MINING projects are a small part of the Colonial Development Corporation's programme and present an unhappy picture apart from Mbeya Exploration and Kilembe Mines. Last year Kilembe made a profit of £650,952 and declared a maiden dividend. But whatever one may say about the spread of the C.D.C.'s 91 projects that were in hand at the end of last year, from an overall operational and investment viewpoint 1960 was a very successful year. It is significant that managing agency fees of £156,604 have been shown in the accounts for the first time, thus reflecting the growing importance of this side of the Corporation's activities.

The Macalder-Nyanza Mines and Tangold Mining Co. were again in trouble last year and, after 12 years of salvage operations, it has been decided to run down Macalder over the next twelve months. In fact, the C.D.C. has written off a £2,000,000 investment in Macalder which represents its biggest loss until now in East Africa.

The C.D.C. holds 94.3 p.c. of the mine's share capital and had taken over the project as a salvage operation in 1950 at the request of the Kenya government. Formerly a successful gold mine, Macalder was switched to copper and the C.D.C. spent nearly £1,000,000 on surveys and investigation. By the end of 1958 as a result of a new production policy and operating economies net trading losses had been cut from £200,000 to £71,000 but, last year taking into account both falling copper yields and further evidence of irregularity in the orebody, it became clear that further exploration would have entailed considerable expenditure without any guarantee that payable ore would be found.

At Tangold the power disaster last year was followed by a confused period leading to the withdrawal of the consulting engineers. Remedial measures put in hand last October, however, have shown some indications that it may be possible at any rate for the mine to recover the capital invested in it.

By contrast the pyrochlore venture of Mbeya Exploration Co., in which the Billiton Maaschappij has a 70 per cent shareholding and the C.D.C. the balance, holds out considerable long-term promise. The future of columbium as an engineering and nuclear metal depends on large reserves of pyrochlore; hence the importance of the big reserves proved at Mbeya. The problem, however, is to find a commercial process for treating the Mbeya pyrochlorides.

Last year a slotting programme was carried out over a section of the orebody to investigate ore characteristics and their influence on mill recovery. Extensive test work on pyrochlore flotation was carried out at the mine by the chief research officer of the Tanganyika Geological Survey. Recoveries were also investigated and the pilot mill was used to treat 29,000 tons of ore of average grade 0.46 per cent Nb_2O_5 to provide primary gravity concentrates for flotation tests at the Tanganyika Government Laboratory, at Warren Spring Laboratory, and at the NV Hollandische Metallurgische Bedrijven Laboratory.

Elsewhere in Tanganyika the possibility of applying an underground gasification process to the deposits of the Rungwe Coal Co. is being studied in the light of recent experiments in the U.K. while further investigation of deposits of Liganga Iron Ltd. has been postponed until there is a railway to open up the nearby coalfields.

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Mineral Resources Development in U.S.S.R.—II

FOUR large aluminium plants are under construction, to be added to the existing nine. The Krasnoyarsk plant produced its first metal in 1960 and the Irkutsk plant in February 1961. Existing plants are to be enlarged, and by 1965 aluminium production will be three times bigger than in 1958, one quarter of the increase being from enlarged plants and the rest from new ones.

This spectacular increase in output must be supported by a very great increase in ore output. Although the basic reserves of bauxite prospected in the Soviet Union were ten times bigger in 1960 than before the war and are large enough to supply for many years the raw material needs of the existing plants, future development (especially in the East, where cheap electric power attracts Soviet planners, and where by 1965 70 per cent of the total output of aluminium will be produced), demands the discovery of new sources of raw materials.

The nepheline and alunite deposits, discovered in very large quantities in Siberia, Kola peninsula, Armenia, Kemerovo-oblask, Ukraine, Kazakhstan and Azerbaizhan, have this advantage over bauxites, that from nepheline syenites not only aluminium can be produced, but also a considerable quantity of cement. This is of particular importance for Siberia, where until now no proper quality limestone deposits for a high quality cement industry have been found, the existing deposits containing too high a proportion of silicates and manganese compounds. From 20 tonnes of nepheline one tonne of alumina and 18 tonnes of cement can be produced; the Achinsk alumina plant, based on local nephelines, will therefore produce both raw material for the Irkutsk (Shelekhovo) aluminium plant and the cement which is so badly needed for Siberian construction projects.

All Krasnoyarsk aluminium will be 25 to 30 per cent cheaper than the present average costs, and alumina 40 per cent cheaper. By the end of 1965 the average production costs of aluminium will have been reduced by 20 per cent. This will be of importance for aluminium exports to Western World countries.

The large opencast bauxite mines at Turgay (raw material basis for the Pawhedar aluminium plant) are still under construction.

Rare Metals

The Soviet Union's known reserves of rare metals are sufficient to satisfy the needs of the present Seven Year Plan (1959-65), but geological prospecting for these metals still lags behind the potential possibilities of the main producing regions of the U.S.S.R. Commercial evaluation of these reserves is not possible at present because as yet no technological processes have been evolved, which could serve as a basis for such evaluations.

Great progress has been made since the 21st Party Congress decisions in developing the prospecting and extraction of rare metals. However, the Minister of Geology of the U.S.S.R., Mr. P. Antropov, has stated that it is less important to discover big deposits of rare metals, than to establish the technical methods for the extraction and utilisation of these metals, because the reserves already established are sufficient to allow large scale production in the U.S.S.R.

Moreover, there is an urgent need to establish technical applications for the rare metals and determine their economic advantages. The Moscow institute for rare metals—the

The progress and problems of Russia's mining industry are discussed by Lt. Col. Jan Kowalewski in "The Mining Journal Annual Review", 1961. In a supplementary article, of which this is the second of two instalments, the position in regard to individual metals and minerals is surveyed.

GIREDMET, with laboratories for each one of the rare metals, has been made responsible for these tasks.

Although in some plants up to 16 elements are being extracted from the processed ores, in general no more than 30 to 50 per cent of the rare metals contained in the ores are being obtained, and this at exorbitant costs.

The most important deposits of rare metals are in the North West (Kola peninsula), in the Urals, Ukraine, Eastern Kazakhstan, Transbaykalia and in the Far North East.

Gold

The slow-down in Soviet gold production, which began after 1953, is still continuing. The reasons are lack of manpower and the gradual exhaustion of several of the best placers. Although the Soviet authorities hotly deny it, in fact in three main gold producing areas plants are being shifted to more distant localities. In Kolyma, which accounts for nearly two-thirds of the total gold production, several big mines are suffering from "the lack of guaranteed reserves" of gold, and consequently new mines had to be opened in the far north-eastern parts of the territory; e.g., in Chukotka (Gremyachyi mine, Anyui mines). The same is happening in Yakutia, where new mines are being opened in Allakh-Yun, Dzhugdzur and the upper Indigirka regions, because the old Aldan mines are being exhausted, Aldan and Dzhugdzur now take second place to Kolyma as gold producing areas, contributing some 20 per cent of the total output. In the Lena region a new gold industry is springing up in the Mama-Chuya area, far from the old gold mines.

The Soviet Ministry of Geology has issued instructions to find new gold placers, to intensify reef gold mining, and to restart dredging on the dumps of abandoned gold mines. Although the known gold reserves are described as "satisfactory", it is most important to discover new deposits and exploit known deposits of low grade. It is believed that today all surface gold deposits are known, so that new ones must be sought under the cover of alluvia along the ancient system of rivers. They must also be looked for in distant or not yet explored areas such as the Far East, North Caucasus, Central Asia, Urals. Co-operative gold prospecting is again being encouraged. The Minister of Geology, Mr.

By

Jan Kowalewski

Antropov, has stated that "by rational exploitation of the known gold reserves, any Soviet State needs in gold can be satisfied. The Soviet Union has always been a leading country in gold production and will remain so . . ."

The 1960 gold output can be estimated at about 10,000,000 oz., the Soviet Union occupying second place after South Africa in the list of world producers.

Diamonds

Since the discovery of the first kimberlite pipe in North Western Yakutia, in 1954, about 200 kimberlite pipes and dykes have been found in Yakutia, but no more than seven or eight have a diamond content justifying their economic exploitation. Two of these are in the Mirnyi region and one in the Aldan area (both these areas being situated in Southern Yakutia). The rest are in the north, on the Arctic circle.

At present commercial exploitation is being undertaken at the Mirnyi diamond mines. In the North, where only temporary installations are functioning, pending the construction of a hydropower station on the river Vilyui, the town of Almazgrad is to be built.

New discoveries have also been reported from the Urals, where interesting diamond placers have been found in the Upper Vishera basin.

The 1960 diamond output in Yakutia has been estimated at about 900,000 ct. and in the Urals at about 50,000 ct. Of these totals not more than 5.5 per cent are gems. In view of the new discoveries, the 1965 target has been raised from 14-16 times to 25 times the 1958 output.

Gem stones are being cut at Leningrad and Sverdlovsk. Based on home-mined industrial diamonds, six new plants for the production of diamond tools are now in construction in the U.S.S.R.; the first two, in Leningrad and in Terek (N. Caucasus), have begun to produce grinding wheels and grinding wheel dressers. Glass cutters, diamond dies for wire drawing, and diamond drill crowns are also produced.

The export of industrial diamonds from the U.S.S.R. to the satellite countries increased in value from £15,500 in 1955 to £210,000 in 1959.

By 1965 the Soviet Union expects to be self-sufficient in industrial diamonds, and to be able to satisfy the increased needs of her satellite states, as well as having a surplus available for export to the West.

The prospecting programme for diamonds has been extended to the Irkutsk-Bratsk area in Siberia, and to European Russia, where several finds of diamonds were reported in the Kola peninsula, Timan range, and Ukraine (in upper valleys of rivers Teteriv and Bok).

Non-Metallic Minerals

Mica — Soviet mica consumption is expected to increase by 200 or 300 per cent during the Seven Year Plan period, and neither present reserves nor existing capacity for mica production can satisfy these needs. During the last few years the U.S.S.R. has been importing large quantities of mica from India. Surveyed muscovite deposits are nearing exhaustion, and phlogopite reserves are considered insufficient. Apart from the Kola-Karelia deposits, the main Soviet deposits are those of the Aldan, Slyudyanka, and Mana-Chuya regions.

Asbestos — The U.S.S.R.'s known reserves of asbestos are the biggest in the world, but production is lower than in Canada, and much more expensive. In 1960 almost the whole of the Soviet asbestos production was from the Ural mines, where a new deposit at Bazhenov has been discovered and surveyed. However, after the recent discovery of six

chrysotile and three amphibole deposits in Tuva, a second asbestos combine is being built there by the Tuvaasbestos Trust. The fibre of Tuva asbestos is extremely long and can be used for textiles. In 1960 about 1,000,000 tonnes of asbestos were produced, and this output should be doubled by 1965. The industry suffers from considerable losses of asbestos dumped during selection.

Talc — Nearly all the Soviet talc output is concentrated in the Urals, but Ural talc is ferruginous. The unique iron-free talc found in the U.S.S.R. is mined at Onot (Eastern Siberia), but, being expensive, is mainly exported. Domestic needs are only satisfied as to 50 per cent by domestic production, the balance being imported. During 1960 intensive searches for new deposits of talc were undertaken and brought some results in Tuva and in Transbaykalya.

Kaolin — To satisfy the growing needs of the ceramic, chemical and paper industries, twice as much kaolin needs to be mined in the U.S.S.R. than in 1960, when over 2,000,000 tonnes were extracted, 80 per cent of this output coming from the Ukraine. The Ural kaolin is unsuitable for the paper industry. A search for new deposits of kaolin was in progress in Siberia.

Graphite — There are large reserves of graphite, but still more are needed. Apart from known deposits in Ural and Ukraine, new occurrences are being sought in Siberia.

Gypsum — Last year large new deposits of gypsum were discovered near Irkutsk.

Phosphates — The Soviet reserves are the biggest in the world. Of an estimated 5,800,000,000 tonnes, over 3,000,000,000 tonnes are surveyed reserves, these being mainly in European Russia and in Kazakhstan. Siberian phosphates are of low quality and limited in quantity. In 1960 the Kola apatite mines were greatly expanded to treble the present output.

Potassium Salts — Soviet reserves, recalculated in potassium oxide, amount to many tens of thousands of million tonnes, and are considered to be the world's biggest. Ninety per cent of these are in Western Urals, the rest being situated in Western Ukraine, Byelorussia, Kazakhstan and Turkmenia. Up to 1960 no deposits had been found in the east, where intensive prospecting had been conducted.

Salt — The main consideration is to satisfy the requirements of Siberia, where until now salt has been transported from the west. Deposits have been discovered in Southern Yakutia, and the problem to solve is organisation of mining in this region.

Fluorspar — All deposits are in the Asiatic territories: Primorye, Transbaykalya and Central Asia. In 1960 a large mine, with a tunnel 5 km. long and a processing plant were nearing completion at Toy Tyube, Uzbekistan.

Felspar — This mineral is produced only from pegmatites, 65 per cent of the output coming from Karelia and 32 per cent from Ukraine. In Krasnoyarsk a pegmatite processing plant was in construction in 1960, to process pegmatites from the Barginskoye deposits. Owing to increasing consumption Barginskoye will be exhausted in a few years, and it is planned to begin extracting felspar from granites by mechanical processing.

Sulphur — The Soviet deposits are among the largest in the world, and are mainly in Ukraine.

General — In general there has until now been no single and overall plan for the development of non-metallic minerals. However the increasing needs of Soviet industry and agriculture, demanding the doubling and trebling of outputs, must now be taken into consideration by the central planning authorities with more care than in the past.

In connection with the large plans for agriculture, intense hydrogeological prospecting has been going on during the past few years in the dry regions of the Soviet Union to discover and put into use underground water reserves.

Machinery and Equipment

Safety Research and Equipment for Mining

The recent report of The British Electrical and Allied Industries Research Association contains interesting notes on research into safety equipment of the flameproof type. The report points out that in flameproof equipment it has been shown for some explosive gases that obstructions in close proximity to but outside the flange gap increase the hazard of explosions. A tape wrapping to improve dust tightness is particularly dangerous. The explanation for this phenomenon is elusive, but it is being systematically investigated by a range of experiments with various gases and obstructions.

With the co-operation of the Factory Department of the Ministry of Labour, field tests under industrial conditions of gaskets for sealing flameproof equipment are being made, E.R.A. research having shown that this appeared to be a safe procedure.

Five more explosive gases have been classified for intrinsic safety and the B.S.I. has been advised, while 200 inflammable compounds have been studied by consideration of their chemical and physical properties and 75 recommended to B.S.I. for inclusion in the pentane class.

A study of the effect of steep-fronted pressure waves on flameproof enclosures has been made and the results obtained from Ministry of Power certification tests on 21 flameproof motors have been analysed with a view to reporting the findings to the B.S.I.

★

The U.K. Atomic Energy Authority reports that finely-divided uranium, plutonium and, especially, thorium metal are pyrophoric when finely divided; they can ignite spontaneously in air. In plants which process and work these metals turnings, drill chips, and swarf, present a handling and storage problem.

Sometimes, during processing and other operations, fires do occur. These must obviously be dealt with as speedily as possible because of the toxicity of plutonium or uranium oxides which could be produced and dispersed, but also because the materials are very valuable. And the method of extinction must also contain the burning material rather than spread it.

Metallurgists of the U.K. Atomic Energy Authority at Dounreay have produced a fire-extinguishing medium which is a eutectic mixture of dry powdered inorganic chlorides and/or fluorides inert towards the metal involved. The mixture is so chosen that its melting point is below the melting point of the burning metal. This produces two effects:

1. Fusion of the powder takes place locally where it is in contact with the burning metal; a fused skin forms around the metal and this excludes the surrounding air from contact with it.
2. Absorption of latent heat by fusion of the powder exerts a cooling effect on the metal.

The powders have been used, not only experimentally, but also to deal with actual fires at various experimental establishments both in and outside the Atomic Energy Authority.

Very recently a powder of this type has been used in a test to compare its



Martindale heavy duty respirator

properties with those of other fire extinguishing powders where the ignited matter was light magnesium alloy for aircraft wheels. Again its performance was spectacularly successful while some of the other extinguishants in the test not only failed to extinguish the fire but, indeed, made it burn more fiercely.

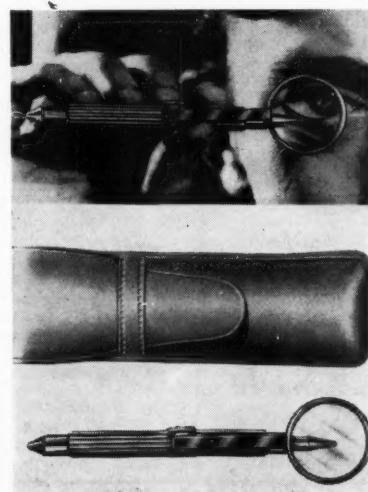
The U.K. Atomic Energy Authority have so far granted licences for the manufacture of these fire extinguishing powders to John Kerr (Manchester) Ltd.

★

The protective equipment division of Martindale Electric Co. Ltd., has introduced a new high efficiency dust respirator which provides protection against dusts as fine as 0.5 micron and smaller. It is known as the Martindale heavy duty respirator.

The design team engaged in the design and testing of the new respirator, has given particular attention to weight,

Eye magnet probe by General Trade Equipment Ltd.



efficiency, easy breathing and comfort. The face piece and filter box are made from lightweight hygienic plastic materials and the complete respirator weighs only 4½ oz. The triangular shape of the filter box ensures unimpaired vision. The plastic face piece can be moulded with the fingers to effect a comfortable seal on any shape or size of face.

The efficient design of the filter box, containing the Ultron (Ultra-Micron) filter, ensures an initial resistance to breathing of 0.65 inches water gauge at 3 cu. ft. per min., at the same time providing highly efficient filtration. The filter is claimed to have an exceptionally long life. The respirator is approved by H.M. Factory Inspectorate for use under several regulations including Iron and Steel Foundries Regulations, 1953; Asbestos Industry Regulations, 1951 and it is also approved by the Ministry of Power for use in mines and quarries and fully conforms to B.S.S. 2091 A.1954, Amendment No. 2.

★

Of compact design and stainless steel construction, the latest item of first aid equipment, the eye magnet probe with magnifier is being marketed exclusively by General Trade Equipment Ltd. and consists of a magnifying glass which adjusts along the length of a fluted barrel. At either end of the barrel are two caps, one containing a powerful magnet, the other a looped piece of catgut. As shown, metal splinters, etc. can easily be removed from the eye by the magnet, the magnifying glass being focused on the actual object in the eye. Similarly the catgut end can be used for removing foreign matter of non-metal content.

RANGE OF SCREENS

The screens manufactured by Saxon Engineering Co. Ltd. are designed to cover an extensive range of separable materials and include screens capable of handling from 400 t.p.h. R.O.M. coal down to the finest materials. Among Saxon screen users are the N.C.B.

Heavy duty vibratory screens are of very robust construction actuated by a fixed eccentric shaft made from high tensile steel bar. The bearings are massive and liberal for their performance and the supporting chassis is of heavy sections, suitably braced and of welded construction. The company's vibratory screens can be totally suspended on spring suspension gear, front or rear suspension only, or mounted on a supporting structure by means of rubber bushed brackets.

Resiliently mounted vibratory screens are the latest type of vibratory screen produced by Saxon. They have many new design features the most important being the resilient mounting of the entire screen body in bonded rubber bushes. All sizes up to 10 ft. by 4 ft. are available with a maximum h.p. requirement of 3. When dealing with fine materials where the moisture content could cause blinding, the screen is readily adapted for thermal deck heating which positively prevents this condition.

In addition to the extensive range of vibratory screens, Saxon also design and manufacture balanced horizontal reciprocating screens.

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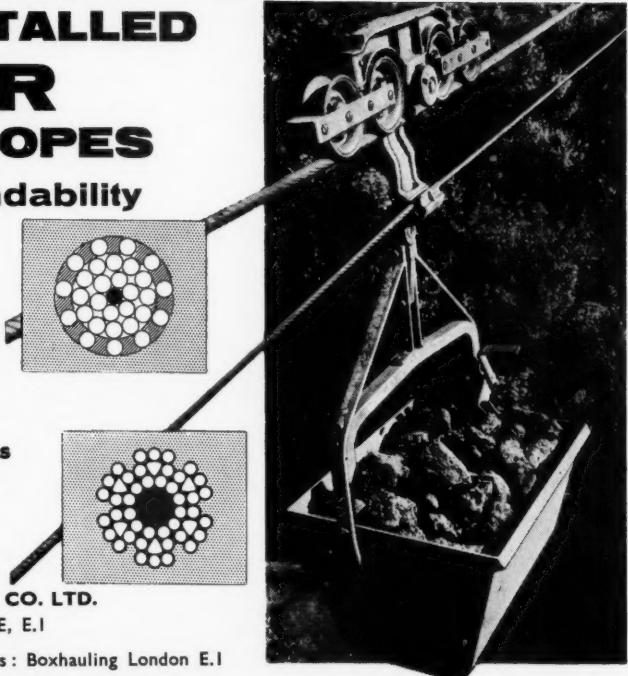


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MINING MISCELLANY

India's Minister for Industry, Mr. Manubhai Shah, has stated in Calcutta that the Indian government would shortly set up an expert study group for the procurement, development and substitution of non-ferrous metals. Particularly stress was laid on substitution; aluminium, easily available locally, could substitute for copper, which was in short supply in India.

★

Two Japanese mining firms—Itah Co., and Mitsui Bussan Kaisha, have set up an office in Lima, Peru, for extensive prospecting by Peruvian and Japanese geologists. The Mitsui company's technicians have been surveying the Bujama copper reserve near Mala, in the province of Canete.

★

Legislation is being introduced into the U.S. Congress to set up a programme of price stabilization payments to domestic producers of metallic tin in concentrates derived from lode or placer mining operations. This legislation, if passed, would establish a floor price of \$1.40 per lb. of metallic tin up to 10,000 tons, or over a period of ten years, which ever comes first. Prospectors have been searching Alaska exhaustively for tin, for many years.

★

A rise is reported in the gold content in the Kolar gold fields during the first quarter of 1961. Ore milled during this period was 151,168 tons, compared with 152,738 tons in the previous quarter, but the grade obtained in Jan-March 1961 was 4.82 dwt., compared with 4.56 dwt. Production totalled 36,421 ozs. compared with 34,804 ozs. Mr. B. D. Jatti, Minister of Mysore, who gave these figures, also stated that exploitation of ore reserves continued at Hatti gold mines, and that results both laterally and in depth justified the expectation that the mine would be able to produce at a rate of 1,000 tons of ore daily by September 1964, compared with the present rate of about 400 tons.

★

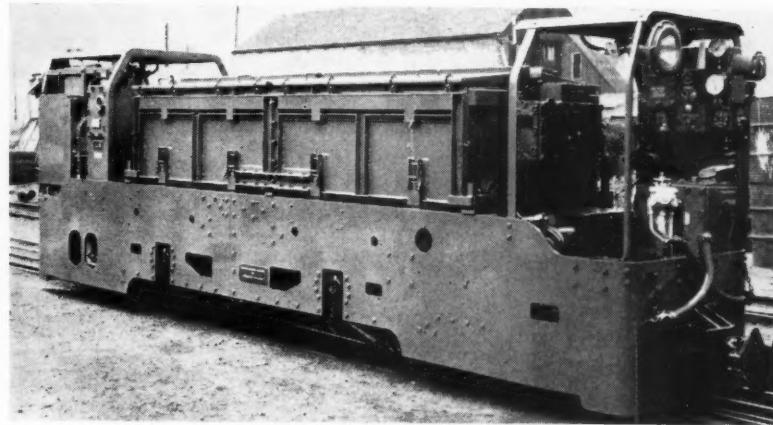
Soviet geological prospectors have reported two new gold deposits in the Urals, one near Kirovgrad, and the other near Pervouralsk.

★

The Indian Ministry of Steel, Mines and Fuel hopes to use more indigenous plant and equipment for the coal mining programme in the Third Five-year Plan. At present equipment is both from American and local sources. The possibility of American technical know-how for the manufacture of mining equipment is being investigated. Soviet collaboration is already available in manufacturing coal mining equipment.

★

A loan of about \$60,000,000 from the World Bank is expected in New Delhi to be made available for the private sector of India's coal industry, and an official delegation from Washington is to settle the details. It is understood that the loan will be made to the government of India, and not directly to the industry. The government will, however, guarantee that the loan is used exclusively for the import of machinery and equipment needed by the privately-owned collieries to fulfil their expanded production programme.



The Traction Division of Associated Electrical Industries Ltd. has made improvements and modifications to the design of the 14-ton type DBF12 approved storage battery locomotive. The illustration shows one of these locomotives with newly positioned charging plugs and centre split on locomotive frame, ready for despatch to Manton Colliery, in the N.E. Division of the National Coal Board. Three of the initial five locomotives have now been delivered and are in service, and the others are due to be delivered at the end of 1961 together with the motor driven battery changing equipment and the battery charging equipment. The latter has been designed to charge the anticipated future requirements of locomotives. The most important modification which has been made is the introduction of a new type of battery isolating switchbox and battery container.

Discussions have been taking place between Yawata Co. of Japan and the African Metal Corporation, an associated company of Iron and Steel Corporation of South Africa to arrange the export of iron ore and ferro-alloy to Japan from South Africa.

★

Nippon Mining Co. states that three Japanese copper smelters were negotiating for a long-term contract to import copper ore from Western Canada because of a copper shortage in Japan. The companies plan to import at least 6,000 tons of 30 per cent concentrates monthly for the next six years, starting autumn 1961. The concentrates will come from the Craigmont mines.

★

The Nippon Kohan Kaisha company of Japan are to send a group to survey South African chrome and manganese resources later this year, with a view to securing long-term contracts for the supply of raw materials for the Japanese ferro-alloy industry.

★

A new Canadian gold producer, Marban Gold Mines, financed by and under the control of Malartic Gold Fields, started production in North-western Quebec recently. Marban is at present working on underground stope preparation and development work, but shipments may be supplemented with material from a stockpile already in being on surface, which is estimated to contain about 33,000 tons of lower grade ore with an average grade of 0.13 oz. gold per ton. According to *The Northern Miner*, the latest estimate of ore in place underground is 242,000 tons averaging 0.16 oz. Marban Mines are north of Malartic, adjacent on the east of Norlartic Mines, another of the Little Long Lac group.

The Norwegian government reports that large copper pyrites deposits, classified as cuprous sulphur ore, in the North Trondelag district are estimated to contain between 15,000,000 and 20,000,000 tonnes. Surveys and preparation for mining operations are being carried out by the state-owned mining concern, Joma Bergverk A/S. The reserves are sited near Lake Limingen on the Swedish border, and near Highway 50. It is proposed to drill a tunnel of nearly 1½ miles through a mountain, which separates the site from Highway 50, the cost of the operation being about £250,000.

★

Large-scale prospecting for iron ore and bauxite over a vast area of Western Australia and the Northern Territory is now proceeding and the Western Australian government has granted 87 temporary reserves in which many major Australian and overseas mining companies interested will have exclusive rights to prospect for two years. The biggest reserve, of nearly 500 sq. miles in the north-east of the State, has been allocated to Consolidated Goldfields (Australasia) Pty., who are working with two U.S. firms, Cyprus Mines Corporation and the Utah Construction Mining Co. Broken Hill Pty. is to explore four reserves covering nearly 900 sq. miles. The Japanese company, Duval Holdings, has been granted rights to prospect for bauxite in the Gove Peninsula of the Northern Territory, and if enough bauxite is found within three years, it could apply for a special lease to mine and export 10,000,000 tons.

★

It is reported from Tokyo that Thailand plans to lift the export ban on iron ore, and has offered Japanese firms a shipment of 30,000 tonnes of 57 per cent Fe-content ore for delivery between September next and March 1962, at U.S.\$8 per tonne.

(Continued overleaf)

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As a result of drilling at Apley Barn, Witney, Oxfordshire, by the Geological Survey of the Department of Scientific and Industrial Research, a number of thin coal seams have been penetrated, between 1,005 and 1,928 ft., including a 3 ft. seam at 1,661 ft. Coring has now reached a depth of over 4,500 ft., and between this depth and 1,928 ft., coals have been found at several horizons, including some exceeding 2 ft. 6 in. thick. The N.C.B. is analysing coals already drilled, and further exploration is proceeding.

★

A new copper mine was put into operation at Majdanpek, Yugoslavia, recently. Its milling capacity will be 3,600,000 tonnes of ore annually from which 120,000 tonnes of concentrates will be produced. Reserves, estimated at about 600,000,000 tonnes of ore, averaging 0.7 per cent copper, will allow for further expansion. Under the five-year plan the annual capacity of the mine is to be doubled and the necessary construction for this programme is to start in 1962.

★

British Ungava Exploration, a new company backed by Anglo American Corporation, COMINCO, Madsen Red Lake, Falconbridge Nickel Mines, Murray Mining Corp., and Advance Red Lake, is planning to spend between \$125,000 and \$150,000 annually for three years on an exploration programme in Quebec's Ungava region. Survey engineers are investigating plans for a 40 mile road at a cost of \$400,000, to link a potential asbestos producing mine in Ungava with a deepwater harbour on Deception Bay, at the northern tip of Quebec, just across Hudson Strait from Baffin Island.

★

Angwa Gold Areas (Pvt), a subsidiary of Selected Gold Mines of Rhodesia (Pvt), is expected to start alluvial gold production shortly along a 12 mile stretch of the Angwa River, Southern Rhodesia. Another of Selected Gold Mines' subsidiaries, Ayrshire Gold Mines of Rhodesia, is already developing the Ayrshire gold mine, near Bantam in the Lomagundi area north of Salisbury.

★

Headway Red Lake Gold Mines and Coulee Lead and Zinc Mines are seeking finance to enable their subsidiary, Columbium Mining Products of Oka, Quebec, to start operations at a rate of 250 tons daily. Columbium Mining under its sales agreement, must be in production by the end of 1962, and plans include a possible expansion of capacity to 500 tons and 1,000 tons per day.

★

The Atomic Energy Commission has granted a research contract for £2,500 to Australian Mineral Development Laboratories of Adelaide to study methods of recovering beryllium from beryl. The A.E.C., which already has an extensive programme of research on beryllium under way at its research establishment, began buying and stockpiling Australian beryl, in the form of crystals, in 1957.

★

Sales to Europe of asbestos from Cassiar, Canada's western producer, have increased this year, mainly in the short cement grade fibres, and sales of the premium spinning grade fibres are quite good.

Metals and Minerals

U.S. Aluminium Price Unlikely to Increase

After a slow start to the year production and shipments of aluminium in the U.S. have been rising steadily since April and are now running at peak levels for 1961. In the first five months of the year primary production totalled 754,200 s.tons and at the end of June it was at a rate equivalent to about 1,950,000 tons a year. This compares with last year's record output of 2,000,000 tons.

Even at the current rate, however, production is equivalent only to about 77 per cent of capacity, which now amounts to the record total of 2,484,000 tons annually. Of this capacity 15,000 tons became operational during the first half of 1961 when a new po-line was started on the West Coast. One of the six domestic producers still has under construction an additional 172,000 tons of capacity on which work has been suspended; its completion would raise U.S. capacity to 2,656,000 tons. There are at present six primary producers in the U.S., but the Cerro Corp. is a probable newcomer to this field. As reported in our issue of July 14, p. 50, a 55,000 t.p.a. reduction plant is under consideration by Cerro, which has two major aluminium fabricating subsidiaries.

The price of aluminium is unlikely to be raised from the present 26 c. a lb. when a wage increase goes into effect, states *American Metal Market*, which considers that sales have not yet achieved sufficient vitality to enable producers to hoist their ingot prices. In its mid-year report on the industry the paper also expresses the opinion that major extensions are likely to be contemplated by existing producers until sustained demand exceeds 85 per cent of installed capacity.

There is a possibility, however, that additional primary capacity may be installed in Nova Scotia as a result of a study by Harvey Aluminium, Inc., one of the six U.S. producers. At present Harvey operates an aluminium reduction plant in Oregon and has fabricating facilities in the West Coast, which are being rapidly expanded. This would be the company's first definite move into the international field, though it has had teams in both Europe and Asia searching for potential sites for the establishment of fabricating facilities. The proposed plant in Nova Scotia, if it materializes, would give Canada a third primary producer, the others being Alcan and Canadian British. Alcan is currently operating five reduction plants in the Dominion, having a total capacity of 788,000 tons. Canadian British, an operating subsidiary of British Aluminium (controlled by Reynolds—Tube Investments) operates a single plant with a rated capacity of 90,000 tons.

★

French aluminium production rose in the first half of 1961 to 131,381 tonnes from 106,870 tonnes in the corresponding period of last year. The 24 per cent increase is accounted for largely by the start of operations at a new po-line at Péchiney's Noguères plant. In addition, France's share of Cameroun aluminium production rose to 17,830 tonnes from 17,000 tonnes in the first half of 1960.

The Norwegian company, Elektrotemisk A/S, is reported to be planning a new aluminium plant. According to one of its directors, Mr. Karl Lorck, the company has been studying the prospects of securing hydroelectric power from the Sira and Kvina river systems in the county of West Agder. Lista, on the southern tip of Norway, is being seriously considered as a site for the new plant.

★

Bauxite exports by Surinam during the first six months of 1961 amounted to 1,704,717 tonnes against 1,804,737 tonnes in the first half of 1960.

PORUGAL'S MINERAL STATISTICS

In the four months ended April 30, 1961, Portugal's output of the principal ores and metals produced was as follows (all in tonnes): Wolfram 4,214, scheelite 168, cassiterite 1,882, gold and silver bearing concentrates 441, tin metal 48, mixed wolfram and cassiterite concentrates 1,440, iron ores 187,000, cupreous pyrites 9,341, and China clay 7,411.

Exports (in tonnes) included the following: china clay 5,711, wolfram 638, gold bearing pyrites 839, manganese 1,502, iron pyrites 139,684.

During this period the U.K. was the largest buyer of Portuguese wolfram, followed by the U.S., Germany, Holland, France and Japan in that order. Spain was the principal buyer of Portuguese tin metal.

NEW FERROCHROME SMELTER

Plans have been announced for the establishment of a smelter for the production of high-carbon ferro-chrome at Que Que, S. Rhodesia. The plant will be erected by a new company, Windsor Ferro-Alloys (Pvt.) Ltd., which took over Windsor Chrome Mines, an established ore producer. Low-carbon ferro-chrome is already being produced at the smelter operated in Gwelo by Rhodesian Alloys (Pvt.) Ltd. Adequate finance is available for the construction of the new smelter, but the company is reported to be seeking an additional sum of about £500,000 to cover other capital requirements, including the further development of the Windsor Chrome Mines to the capacity necessary to keep the new smelter fully supplied with concentrates.

★

The level of fresh chrome buying in the U.K. chrome ore market remains very quiet. Presumably most consumers in the U.K. and overseas are still adequately covered for the current year; hence the tonnages involved in the occasional odd lots which change hands are limited. Japan continues to show interest, but transactions are understood to be in the region of only 500 or 1,000 tons. In the U.S. the market is looking slightly better and in one or two instances buyers have asked for their deliveries to be expedited by a few weeks. Stocks in the U.S. are (Continued overleaf)

still plentiful, however, and as yet there are no grounds for more than a little cautious optimism.

For the next month or two buying interest is unlikely to revive because of holidays, and it will not be until September that buyers generally will start seriously thinking about their requirements for 1962. Meanwhile Russian ore of good quality continues to be encountered at keen prices.

★

G.S.A. has announced in Washington that no acceptable bids were received for the purchase of approximately 46,100 tons of chrome-bearing materials and approximately 151,000 lb. of ferro-chromium alloys offered recently for sale. The material is being re-offered for sale on a sealed bid basis and offers will be received up to 3 p.m. GMT on August 28.

A leading Philippine mineral producer, the Acoje Mining Co., which supplies chrome ore to Japan, is constructing a test plant to be completed this year, with a view to starting the production of chromium products and refining other ferro-alloys and non-ferrous metals, under a technical tie up with a U.S. company. The Philippine firm hopes to sell chromium products to the U.S. and Japan and to secure large outlets on a long-term basis for the new production.

such legislation is enacted. Mr. J. C. Travis, president of Handy and Harman, in a newspaper statement, called for the repeal of all silver legislation, saying: "We are willing to risk a rise in silver prices if the producers will also take the risk that they will go down."

UNCERTAIN QUICKSILVER MARKET

The ex-warehouse price of quicksilver in London remains quibitally unchanged at £65 a flask. The persistent weakening in the U.S. price, which has declined five times in the past two or three months, is not helpful to the London market, however, and the undertone still looks none too assured. Nevertheless, some dealers are not prepared at this stage to lower the London price from £65 per flask.

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possibly because the amount of business occasionally transacted below this figure is of a limited nature. Demand in the U.K. remains very quiet, but on the Continent more interest is reported to be circulating.

U.K. imports of quicksilver from all sources during the first half of this year totalled about 16,788 flasks, according to B.O.T. statistics. In the corresponding period of last year they amounted to 11,423 flasks. Re-exports for the two periods were 3,431 and 1,739 flasks respectively.

MANGANESE MINE WILL CEASE PRODUCTION

The S.A. Minerals Corporation Ltd. has announced that it will terminate development operations at its manganese mine in S.W. Africa and put it on a care-and-maintenance basis. The Corporation, a property-owning and mineral ore-producing company, has the exclusive rights until 1965 to prospect for manganese over an area of 2,000 sq. miles in S.W. Africa.

MAGNESIUM FOR MISSILE TRANSPORTER

The importance of magnesium in U.S. defence programmes is indicated by the use of about 2,250 lb. of magnesium sheet, plate and extrusions in the transporter-erector for the Air Force Minuteman missile in order to minimize highway load weight. The transporter-erector, which consists of a container mounted on a tractor and trailer, will be used to haul this solid-fueled intercontinental ballistic missile to launch sites, where a self-contained hydraulically-operated system will erect the container and missile to a vertical position and lower the missile into an underground launcher. The container

weighs 8,065 lb., and is 62 ft. long and 8 ft. by 8 ft. at the aft end. It uses a total of 1,940 lb. of magnesium alloy sheet and extrusions in the side panels, rear doors and all access doors, resulting in a weight saving of 400 lb. Another 305 lb. of magnesium sheet and extrusions are used in the cab.

U.S. STAINLESS STEEL PRICES

Crucible Steel Co. of America has withdrawn its recent increase of about 2 per cent in the price of nickel-bearing stainless steel, which followed the 10 per cent rise in nickel prices (*The Mining Journal*, July 7, p. 21). Other U.S. producers had hinted that they would follow Crucible's example if a second big stainless producer raised its price, but no one did.

Copper • Tin • Lead • Zinc

(From Our London Metal Exchange Correspondent)

With markets influenced by the holiday season, price movements over the last week have been negligible and neither the increasing tension in the international political field, nor the introduction of the new financial measures in the U.K., have had very much effect.

COPPER PRICES UNAFFECTED BY CHILE DISPUTE

In the copper market the development in the labour situation in Chile has been watched with much interest and, although at the time of writing there appears to be a likelihood of a strike at the beginning of August, which may well spread to all the producers in that country, prices have remained unaffected.

LONDON METAL AND ORE PRICES, JULY 27, 1961

METAL PRICES

Aluminium, 99.5%, £186 per ton	Magnesium, 2s. 2d./2s. 3d. lb.
Antimony— English (99%) delivered, 10 cwt. and over £230 per ton	Manganese Metal (96% / 98%) £275/£285
Arsenic, £400 per ton	Nickel, 99.5% (home trade) £660 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.	Osmium, £17/£22 oz. nom.
Cadmium 11s. oz. lb.	Osmiridium, nom.
Cerium (99%) net, £15 0s. lb. delivered U.K.	Palladium, Imported, £8 12s. 6d.
Chromium, Cr, 99% 6s. 11d./7s. 4d. lb.	Platinum, U.K. and Empire Refined £30 5s.
Cobalt, 12s. lb.	Imported £271/£28
Germanium, 99.99%, Ge. kilo lots 2s. 5d. per gram	Quicksilver, £65 ex-warehouse
Gold, 25s. 8d.	Rhodium, £43/£45 oz.
Iridium, £20/£23 oz. nom.	Ruthenium, £14/£16 oz. nom.
Lanthanum (98% / 99%) 15s. per gram	Selenium, 46s. 6d. per lb.

Platinum, 79 1/2 oz. spot and 80 1/2 oz. f.d.

Tellurium, 37s. 6d. lb.

ORES AND OXIDES

Antimony Ore (60%) basis	30s. 0d./35s. 0d. per unit c.i.f.
Beryl (min. 10 per cent BeO)	270s. 0d./275s. 0d. per ton unit BeO
Bismuth	30% 5s. 0d. lb. c.i.f.
Chrome Ore— Rhodesian Metallurgical (semifriable 48%)	20% 3s. 3d. lb. c.i.f.
" Hard Lumpy 45%"	(Ratio 3 : 1) £15 5s. 0d. per ton c.i.f.
" Refractory 40%"	(Ratio 3 : 1) £15 10s. 0d. per ton c.i.f.
" Smalls 44%"	(Ratio 3 : 1) £11 0s. 0d. per ton c.i.f.
Baluchistan 48%"	(Ratio 3 : 1) £13 5s. 0d. per ton c.i.f.
Columbite, Nigerian quality, basis 70% combined pentoxides	(Ratio 10:1) £11 15s. 0d. per ton f.o.b.
Lithium Ore— Petalite min. 34% Li ₂ O	Nb ₂ O ₅ : Ta ₂ O ₅ 160s./165s. 0d. per l. ton c.i.f.
Lepidolite min. 34% Li ₂ O	50s. 0d./55s. 0d. per unit f.o.b. Beira
Amblygonite basis 7% Li ₂ O	76s. 0d./80s. 0d. per unit f.o.b. Beira
Magnesite, ground calcined	75s. 0d./85s. 0d. per ton f.o.b. Beira
Magnesite Raw (ground)	£28 0s./£30 0s. d/d
Manganese Ore Indian— Europe (46% / 48%) basis 60s. 0d. freight	£21 0s./£23 0s. d/d
Manganese Ore (43% / 45%)	73d./75d. c.i.f. nom.
Manganese Ore (38% / 40%)	69d./71d. c.i.f. nom.
Molybdenite (85%) basis	nom.
Titanium Ore— Rutile Australian 95/97% TiO ₂ (prompt delivery)	10s. 0d. per lb. (f.o.b.)
Ilmenite Malayan 50/52% TiO ₂	£20 10s./£21 0s. per ton c.i.f.
Ilmenite Travancore 58/60% TiO ₂	£11 10s. per ton c.i.f.
Wolfram and Scheelite (65%)	£15/£15 10s. per ton c.i.f.
Vanadium— Fused oxide 95% V ₂ O ₅	128s. 6d./132s. 6d. per unit c.i.f.
Zircon Sand (Australian) 65-66% ZrO ₂	7s. 6d./8s. per lb. V ₂ O ₅ c.i.f.
	£16 ton c.i.f.

Although stocks in official warehouses rose at the beginning of the week by a further 875 tons to a total of 20,852 tons, the contango has shown no signs of widening and even the raising of the U.K. Bank Rate to 7 per cent had no effect. It must be presumed, therefore, that the majority of stocks are very firmly held. It seems possible that before last Tuesday there was a certain amount of buying of metal for overseas interests in case there should be any alteration in the sterling exchange rates, but that on receipt of news of the Chancellor's statement some of this was re-sold.

TIN FLUCTUATES NARROWLY

The tin price has fluctuated within narrow limits but here the contango has shown signs of widening, although stocks continued to fall with a further reduction of 230 tons to a total of 6,255 tons at the end of last week. Nothing further has been heard about releases of tin in the U.S. and it is expected that there will be little alteration in price levels prior to the next meeting of the International Tin Council in London on August 22.

On Thursday the eastern price was equivalent to £929 1/2 per ton c.i.f. Europe.

U.S. ADMINISTRATION AGAINST LEAD-ZINC DUTIES

The lead market has had one of its periodic bouts of firmness which took the forward price up to £67 per ton earlier in the week, but persistent selling from one quarter, usually connected with either Russian or Spanish lead, caused a subsequent weakness to develop. Stocks fell by 89 tons to a total of 12,979 tons and in spite of the 7 per cent Bank Rate the contango contracted towards the middle of the week.

The zinc market remained featureless, stocks falling 142 tons to a total of 6,685 tons with reports of routine demand for both G.O.B. and higher grades.

In the U.S. it has become apparent that the administration does not favour any increase in duties on either of the metals, and that there is a reluctance to grant too much support to the small high cost producers. It appears that if anything is done at all to help them it will not be on a sufficient scale to effect appreciably the prices of the two metals.

OFFICIAL TURNOVERS

Official turnovers (in l.tons) for the week ending July 21, with the previous week's figures in parentheses are:—

Copper	16,200	(12,975)
Tin	1,250	(1,380)
Lead	6,400	(11,125)
Zinc	5,875	(7,700)

Closing prices are as follows:

	July 20 Buyers Sellers	July 27 Buyers Sellers
COPPER		
Cash ..	£228	£228 1/2
Three months ..	£231 1/2	£233 1/2
Settlement ..	£228 1/2	£229 1/2
LEAD		
Current 1/2 month	£65	£65 1/2
Three months ..	£66 1/2	£66 1/2
TIN		
Cash ..	£912 1/2	£913
Three months ..	£923	£923 1/2
Settlement ..	£913	£915 1/2
ZINC		
Current 1/2 month	£77 1/2	£78
Three months ..	£79 1/2	£79 1/2

Mining Finance

Refund of Malayan Buffer Stock Payments

Malayan tin mines are at present in the process of receiving back as a lump sum the total of their contributions to the first buffer stock which is being liquidated in consequence of the expiry of the first five year tin agreement. At the same time, now that the second five year agreement is in force, they will be required to pay a cess on exports, which at present tin prices should be worked off in about two and half years.

The total amount now being repaid to the Malayan tin industry from the first buffer stock is £6,468,000 of which £2,566,000 will be payable to the Chinese section of the industry. Beyond this, the buffer stock has made a trading profit less management expenses during the period of the first agreement which, it is thought, may be something in excess of £1,000,000. Of this, Malaya will in due course receive rather under 40 per cent on which tax will presumably be payable in companies' hands.

As far as the European owned mines are concerned, interest naturally centres on what is likely to be the policy of individual mines as regards their portion of the returned contributions and profits. The first point to be clear about is that the total of something over £4,000,000 to be received by the European mines represents money which will or will not be taxable according to whether, when the contributions were made, the company opted to have them treated as a deduction from tax at the time or

whether they were paid out of taxed profits. It is thus important for shareholders to ascertain the tax procedure adopted by their particular company before assessing the present net value of the repayment.

In dealing with its repayment, each mine will clearly have three possible courses from which to choose:

1. It can use up to about 80 per cent of the returned contributions to make advanced deposits up to its total liability under the second five year agreement, thereby avoiding the interest charges which the government will make for financing the payments over a period.
2. It can regard the refund as an accumulated reserve available for dividend distribution.
3. It can retain the refund in the business for development expenditure or mineral search.

Companies, which are not immediately in need of liquid assets for development, may well feel that part at least of the refund should be passed on to the shareholder, in which case the question arises of when to do it. To this the answer may well be later rather than now—for two reasons.

First, dividend payments are high at the moment, reflecting the current tin price and absence of quotas, and it would certainly fit in neatly with the whole concept of the tin agreement for the refunds

London Market Highlights

As far as the mining share market was concerned, Mr. Selwyn Lloyd's crisis measures were received with some relief. This was because there had been fears that legislation might have been introduced to freeze dividends, including those of the mines. Such a move would have fallen heavily on the Tin group, in particular, where current rising earnings are producing a rich harvest of dividends. The market generally also drew some comfort from the view that overseas operating companies would consider the Chancellor's request for dividend restraint to apply only to the home industries. Moreover, there was the feeling that the high yields offered on top class mining issues—some of which qualify for Trustee status—might tempt a few investors away from the uncertain industrial sections.

Certainly, it was significant that the Kafir market stayed remarkably firm. There was no wild upward movement, but a gradual strengthening which can only be attributed to a genuine investment demand. It could scarcely be said that buying reached large proportions, but it was persistent and in a market painfully short of stock it made quite a sharp impression on share prices.

Naturally, the finance house section came in for particular attention by this cautious return of buyers. Notably firm here were two stocks which fit the Trustee Act qualifications. One of them, Selection Trust rose 5s. 7½d. in three days to 9s. 10½d. and became one of the very few African mining issues to reach a new high for the year. Consideration of the group's important non-African invest-

ments has probably been a factor here, as well as with the other Trustee stock, Consolidated Gold Fields, which advanced from 51s. 6d. to 55s. 7½d., the latest price comparing with a low earlier this year of 43s. Other firm spots included Anglo American, 5s. higher at 122s. 6d., and Union Corporation which gained 3s. 6d. to 50s.

Shares of the individual mines benefited to a lesser extent and buying was very selective. Most of it centred on the O.F.S. group where Western Holdings became a feature with a three-day advance of 7s. 6d. to 117s. 6d. Smaller gains of 1s. or so were registered in President Brand (51s. 10½d.) St. Helena (57s. 6d.) and Free State Geduld (78s. 1½d.).

Tin shares made some recovery after a further setback at the start of the week. As before, the losses were entirely the result of local profit-taking and the subsequent rally was assisted by a return of Eastern buyers at the lower price levels. Tronoh see-sawed from 77s. 6d. to 74s. and back to 76s. Ayer Hitam which fell from 54s. to 49s. 6d. on Monday, later rallied to 52s. and Sungai Besi at 49s. 6d. fluctuated between 51s. 6d. and 47s. 6d.

The hope — now realized — that Southern Rhodesia's new constitution would be approved by the Referendum made for a revival in some of the Southern Rhodesian land and gold issues. Among them London and Rhodesian hardened to 7s. The Northern Rhodesian copper issues were again very steady indeed, thanks to a quiet investment demand. Nchanga moved up further to 48s. 6d. and Rhokana 1s. 6d. to 47s. 9d.

to be held in a dividend equalization account. Secondly, to the extent that increased dividends found their way into the hands of shareholders in the East, they might tend to get sucked back into the present tin investment boom and thus push prices higher at a time when a number of shares are already on an unreasonably low yield.

The short answer to all this seems to be that the investor would be unwise to assume, in advance of any statement from his board, that the current repayment of buffer stock contributions is likely to have any immediate impact on dividend payments.

E.R.C.'s CAPITAL INCREASE

At the annual general meeting of East Rand Consolidated last week, the board secured a very comfortable majority in favour of their proposal to increase the company's issued capital by 50 per cent by a rights issue of 3,000,000 two shilling shares. The company's shares have been standing at around par this week against an intrinsic value (based on the latest balance sheet) of 2s. 2d. per share before the rights issue, and 2s. 1d. after. Last week's market value of the portfolio was stated to be only slightly lower than at December 31—the date of the balance sheet.

E.R.C. is a mining finance company which in recent years has considerably increased its holdings in industrial shares as against its mining investments—primarily in gold shares in Southern Africa. In May 1957 the book value of its quoted investments stood at £550,000 (the market value was £20,000 less) whereas in May 1961 the book value stood at £655,000 (with a market value some £40,000 higher). This improvement occurred despite the heavy fall in the market value of its gold share holdings during the past year. In this same four year period the proportion of industrial shares in the portfolio rose from 11 per cent to 36 per cent and the board has made it clear that it intends to apply the proceeds from the share issue to investments which would further diversify the company's holdings away from Southern Africa. Dividends and interest received in 1960 totalled £55,000 which suggests an average gross yield on investments of something better than 8 per cent.

Profits from share dealing last year (£24,000) were understandably lower than the average of recent years and it would be wrong in the present state of either industrial or gold share markets to count on their being any better this year, if as good. On the other hand there is an expectation of higher royalty earnings this year from the company's vanadium concession in South Africa which could well exceed the 1960 figure by £25,000 or more than the total revenue from share dealing this year.

Thus all in all there seems no reason for questioning the board's confidence in being able to sustain the present dividend rate of 10 per cent on the enlarged capital.

The chairman has made it clear in his address to shareholders (reported on page 104) that the increased capital is needed to take full advantage of the special tax position, there being considerable assessed losses which should enable the company to earn for members an exceptionally high return over the coming years. Full advantage can only be taken of this if funds are available to make advantageous investments as and when opportunity presents.

In the light of this explanation and of the marked improvement which has taken place in the company's earnings and portfolio in recent years, shareholders may well wonder why there should have been any opposition to the proposed capital issue. Basically the objection appears to have centred on the contention that, as E.R.C. shares had been standing at something under par for much of the time since the issue was announced, there was reason to fear that the issue might be heavily under subscribed thus leaving the underwriting company itself a substantial shareholder, in the position to take up a large portion of the new issue at par, and consequently on what, it must be assumed, the critics would regard as advantageous terms.

Shareholders opposed to the share issue cannot, it seems to us, have it both ways. Either the offer is unattractive, in which case the underwriters are carrying a risk at what is understood to be an extremely low fee, or the prospects for the company are good (and it appears to be part of the critics' case that the outlook is if anything more promising than would appear from the latest report and accounts) in which case shareholders have the remedy in their own hands by doing their best to ensure that the issue is taken up as widely as possible.

In any case, shareholders who are not satisfied with a prospective return of 10 per cent or are discounting the company's future potential can at present prices contract out at only 2d. or 3d. below the share's intrinsic value.

One figure not disclosed at the annual meeting was the extent of the accumulated tax losses which must obviously have a bearing on the attraction of the new issue. However, shareholders were assured that the figure was substantial, and having regard to the present yield the wise course would seem to be to take up the rights issue and then await developments.

GOLD FIELDS TO SEARCH FOR IRON ORE IN W. AUSTRALIA

The sharp rise in Australia's consumption of steel products in recent years has turned that country temporarily to a net importer of steel. There has been an embargo on iron ore exports since 1938 which is only now beginning to be dismantled (see *M.J.*, January 27, page 87 and May 5, page 499). Australian consumption of iron ore is expected to rise from the current rate of 4,250,000 tons to an annual rate of about 7,700,000 tons by 1970.

In the circumstances it is not surprising that major Australian and overseas mining interests are becoming involved in a widespread search for further ore reserves. In this connection it has been announced this week that Consolidated Gold Fields (Australia) Pty. is undertaking an iron ore exploration venture in Western Australia jointly with the Cyprus Mines Corporation of Los Angeles and the Utah Construction and Mining Co. of San Francisco. The Western Australia government has granted authority to prospect over an area of 308,256 acres in the Ellaraine Hills area east of Port Hedland. The ground survey has already begun and this will be followed by an airborne magnetometer survey next week. (See also page 97.)

Although exports of iron ore from Western Australia are to be resumed following the Commonwealth government's relaxation of the embargo,

Australia's own growing iron ore requirements makes it far from certain that whatever deposits are found as a result of this new exploration project, of which high hopes are clearly entertained, will necessarily be available for the export market. As matters stand at present, the Commonwealth government has only allowed the resumption of exports on the following conditions:

1. that export is prohibited from proved high grade reserves,
2. that a limit of 50 per cent will be exportable from smaller occurrences,
3. that there will be a limit on the exportable total and the period during which export will be permitted in respect of each deposit.

This week's announcement from Consolidated Gold Fields is further evidence of the energy with which this group is applying itself to diversifying its mining and industrial interests outside of South Africa. Gold Fields (Australia) is a wholly owned subsidiary of Gold Fields Mining and Industrial which in turn is the company in the Gold Fields group responsible for the administration of all the group's non-South African interests. It will be recalled that in September of last year G.F.M.I. had an issue of £5,000,000 7 per cent guaranteed debenture stock payable 1980/85, the proceeds of which would, it was stated, be applied primarily to a substantial increase in the group's interests in Australia and America.

KENTAN GOLD PAYS LESS

Kentan Gold Areas report preliminary profits, after tax, for the year to March 31 last at £129,659 against £166,816 in the preceding year, the difference being accounted for mainly by a tax credit in the earlier year compared with tax liability of £16,689 in the year just ended. Following an interim dividend of 1s. 6d., a final distribution of the same amount is now recommended, making a total distribution of 15 per cent against 20 per cent in the year to March 31, 1960. The carry forward remains substantially unchanged at £626,193.

The results for Kentan's wholly owned subsidiaries, Zambesia Exploring Company and Zambesia Investment Company, are included in the above group results. Kentan's principle outside interest is its holding in Tanganyika Concessions.

Geita Gold Mining, in which Kentan has a 78.63 per cent interest, shows a working profit in the year under review of £14,157 (£47,555).

SUNGEI KINTA IN TRANSITION

As forecast by the chairman a year ago, operating results during 1960 reflect the change over in mining methods at present being undertaken by Sungei Kinta Tin Dredging. This company, which was adversely affected by outflow restriction and has not paid a dividend since 1957, took the decision to close down its dredge some 15 months ago and is now in the process of changing over to open cast operations. The preliminary accounts show a net loss of £27,412 for the year to December 31, 1960 against a loss of £14,479 in the previous year.

In the years prior to restriction, the company was producing concentrates on average at an annual rate of about 300 tons.

Killinghall Tin.—Sales of tin ore for the quarter ended June 30, totalled almost 60 tons. It has been announced that the difficult dredging conditions that maintained throughout the previous quarter have continued but the dredge is now moving towards an area where better values are indicated. In order that the dredge movement should be rapid the dredging depth was limited during June.

Lake View and Star announce that Mr. R. H. A. Neuschild has been elected chairman of the company.

*

Mr. A. M. Baer, deputy chairman of Consolidated Zinc Corporation, has been appointed chairman in succession to the late Mr. L. B. Robinson. Lord Baillieu has been appointed deputy chairman.

*

Mr. A. M. Baer has been appointed chairman of New Broken Hill Consolidated Ltd. in succession to the late Mr. L. B. Robinson.

*

Mr. E. J. L. Budd has been appointed to the board of Entores.

MILL SUPERINTENDENT

Fully experienced operative Mill Superintendent required by Company operating in CYPRUS to superintend mill plant copper pyrites ore by selective flotation producing copper concentrates and pyrites. Two year tour with three months leave full pay. Passages paid, free housing, medical attention. No educational facilities for children. Applications giving details age, experience and personal information in strictest confidence to Box 393 c/o Walter Skinner, Ltd. 20 Copthall Avenue, London, E.C.2, England.

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New, unused, 'SIEBE GORMAN' Proto No. 2, Mark IV, two hour breathing apparatus sets, complete and perfect in steel case, ex M.O.S., 100 available at £20 each; also 60 ditto except less rubber bag, at £12 10s. each, paid inland.

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EAST RAND CONSOLIDATED

NEW SHARE ISSUE

The thirty-fifth annual general meeting of East Rand Consolidated, Ltd., was held on July 20 at the Chartered Insurance Institute, London, E.C.

Mr. C. J. Burns, Chairman, presided.

The Chairman said: It is usual, in view of the length of notice imposed upon us by conditions attaching to a Johannesburg share quotation, for me to address a few remarks to Members to bring them up-to-date and this year I intend to deal also with our proposal to increase the Issued Capital of the Company in view of its importance to Members.

It is my opinion that we have at the present time reached a stage in the Company's existence when it may not be inopportune to review the considerable change which has taken place in the Company's financial and profit-earning structure during the past few years, and especially since the majority of the present Directors were elected to office.

Increasing Revenue

In 1957 our Income from dividends was £30,759 and sundry revenue was £1,703, while our quoted investments had a book value of £536,904. By 1960 our dividend income had increased to £55,547 while our income from royalties and sundry revenue was £13,110. The book value of our investments at the present time has advanced to £665,636; that is to say, an increase of £130,000 in four years. During this period dividends paid to Members have increased from a maiden dividend of 6½% to 10% together with increased cover therefore, and, in spite of the sound asset backing together with two secure and increasing sources of revenue, our shares, owing to the economic uncertainties in this country and the political situation in South Africa, are priced at little more than their par value. This is a situation over which the Company itself has little control. Incidentally, it is a provoking thought that, whereas in 1950 when the Company's investment and other income totalled as little as £10,000 and when a loss of £17,000 was made on the year's operations and with poor asset backing, our shares were priced at twice what they are today. At that date, 75% of the Company's investments were in gold mining shares as against 30% in 1961. Included in the 1950 total were substantial holdings in Eastern Rand gold shares which represented 60% of the Company's total portfolio. Today they form only 5% of the total.

Future Outlook

It is the considered view of your Directors that the Company has now recovered successfully from the difficulties of its inheritance and is in the process of establishing itself with the investment public as a Company giving a secure and above-average return for its shares, coupled with the promise of better dividends to come in the future.

This future can be enhanced by ensuring that the Company has adequate working capital to take full advantage of its special tax position, which enables it to earn for its members returns higher than those available to others. It is clearly

desirable to press this advantage for current benefit.

While current political and economic conditions have resulted in lower share prices generally, such conditions also render more opportune the investment of the new monies resulting from the issue. It is interesting in this connection that, in spite of present lower share quotations, our portfolio other than South African holdings has an appreciation of some £57,000 at the present time over book cost which, however, is almost entirely cancelled by the major decline in South African gold shares which has occurred. While we anticipate that a large part of this fall in South African share prices will be made good when the present South African Exchange Control Regulations are relaxed, the appreciation in the remainder of our portfolio is evidence of the Board's financial judgement.

The present Board's financial policy has been amply justified by the growth in secure sources of income and a more solid asset backing together with an increasing dividend distribution since 1956. The only limiting factor has been the inadequacy of working capital, and the proposed issue will enable the Board to accelerate the programme which has so fundamentally improved the Company's fortunes. It is in this way that the Company's status in the market will be based not on past remembrances but on present performance and expectations.

Letters for the provisional allotments, together with a formal circular to Members dealing with the share issue and a copy of these remarks are to be posted to all Members on July 26. The right to take up and pay for these shares will remain open for three weeks, after which time the received allotment letters in respect of acceptances will remain in currency for a further three weeks. The new shares allotted as a result of this issue will be entitled to any dividend declared in respect of the year to December 31, 1961 and income from investments together with our increasing revenue from royalties, should ensure the maintenance of the present dividend of 10% on the new capital. My Review mentioned that Vanadium Royalties should again show a material increase. For the first five months of this year they total £16,377 as against £10,583 for the whole of 1960.

The very large number of proxies received supporting the proposals for this issue not only augurs well for its success but can be read as a mark of confidence by the general body of shareholders in the Directors' ability to provide for them a rewarding investment.

The report and accounts were adopted: the dividend was approved and a Resolution was passed authorizing the issue of 3,000,000 shares of 2s. each to members at par in the proportion of one such share for every two shares held.

Junior Geologist required for Field work in North Borneo by Metalliferous Mining Company. Tours of service approximately 12 months, salary according to qualifications and experience. Write giving full details, experience etc., stating age and whether married or single to Box 700, *The Mining Journal Ltd.*, 15 Wilson Street, London, E.C.2.

The Mining Journal—July 28, 1961

TRAINING IN COAL PREPARATION

Improved methods of coal preparation are vital to the coal industry at the present time. A working party reported last year that steps must be taken to improve operational efficiency at coal preparation plants and that to achieve this increased efficiency, improved training was necessary. The National Coal Board therefore approached the City and Guilds of London Institute in July 1960 with a view to drawing up a course appropriate to the needs of operatives employed in coal preparation plants. The syllabus which has been drawn up has been devised with direct relevance to the various aspects of work in a coal preparation plant and the part which such a plant plays in the various processes from the winning of the coal to its marketing for the consumer.

Emphasis has been placed on the practical applications of the subjects studied and their connection with the students' daily work. The syllabus includes reference to the origin and formation of coal seams, the need for coal preparation and the various aspects of work in coal preparation plants, e.g. float and sink testing, screening, gravity processes, removal of water and dry cleaning processes.

The National Coal Board hopes that there will be a steady flow of 200 students each year attending colleges and taking the examination.

BRITISH MINING MACHINERY ON SHOW IN ZAGREB

The British Mining Equipment Export Association will have a stand in the Board of Trade Pavilion at the Zagreb International Autumn Fair, and the following members of the association will exhibit their equipment for coal and hard-rock mining, under the auspices of the Association: Bonser Engineering Ltd.; British Insulated Callender's Cables; Clayton Equipment Co. Ltd.; Cable Belt Ltd.; Distinguon Engineering Co.; Joy-Sullivan Ltd.; The Mining Engineering Co. Ltd.; Oldham & Son Ltd.; A. Revrolle and Co. Ltd. and Wickman Ltd. This is the first occasion on which a group stand of mining equipment manufacturers has been organized at an international trade fair.

The British Mining Equipment Export Association has been formed to act as a liaison between British manufacturers of mining equipment and government and international organizers. It also serves to provide information and various other services which can be more efficiently done on a collective basis.

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Private Bankers (Gross assets exceed £2,500,000), are paying 7½% p.a. interest on deposits for the eighth year in succession, with extra ½% added annually on each £500 unit. Details and Audited Balance Sheet from Investment Dpt. MN., Davies Investments Ltd., Danes Inn House, 265 Strand, London, W.C.2.

